

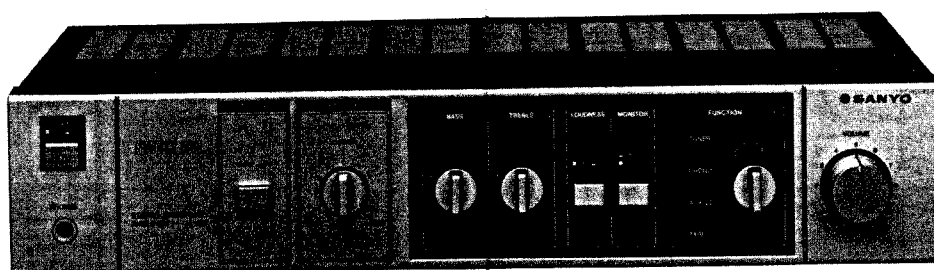
SERVICE MANUAL

POWER AMPLIFIER



JA 220

(EUROPE)



NOTE:

SPECIFICATIONS

The below mentioned specifications are mainly based on the IHF measurements standard. They can therefore not directly be compared with specifications based on the DIN standard or other standards.

Continous output power	20 W x 2 (at 8 ohms, 0.9% distortion)
Input sensitivity and impedance	
PHONO	2.5mV/47 kohms
AUX-CD/TUNER/TAPE PLAY	150 mV/47 kohms
Phono overload level	130 mV RMS (at 1 kHz)
Output level	
TAPE REC	150 mV
Frequency response	20 – 20,000 Hz (AUX-CD)
Tone control response	
BASS	±8 dB (at 100 Hz)
TREBLE	±8 dB (at 10 kHz)
Loudness control response	
100 Hz/10 kHz	+8 dB/+4 dB
Signal to noise ratio	95 dB (AUX-CD)
Power requirements	AC: 220 V, 50 Hz
Power consumption	100 W
AC output socket	AC: 18 V, 200 mA (max.)
Dimension (Approx.)	420 (W) x 200 (D) x 80 (H) mm (16-1/2" x 7-7/8" x 3-1/8")
Weight (Approx.)	4 kg (9 lbs.)

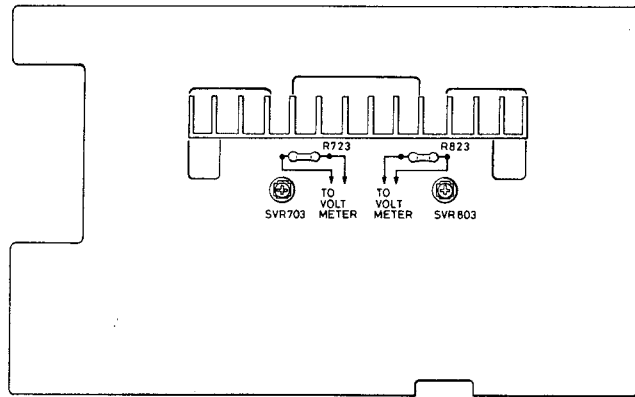
* Specifications subject to change without notice.

ADJUSTMENT

ADJUSTMENT OF BIAS

CONDITIONS

VOLUME Control : "O,, (Minimum).
 BALANCE Control : "O,, (Center)
 BASS Control : "O,, (Center)
 TREBLE Control : "O,, (Center)
 FUNCTION Switch : "AUX-CD,,
 SPEAKER Switch : "ON,,
 SLOUDNESS Switch : "OFF,,
 MONITOR Switch : "SOURCE,,
 Output Load : No Load



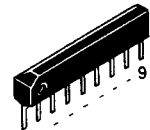
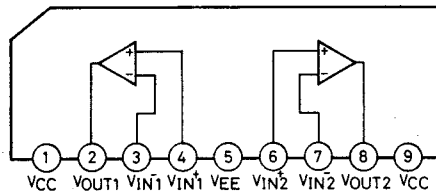
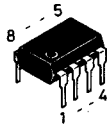
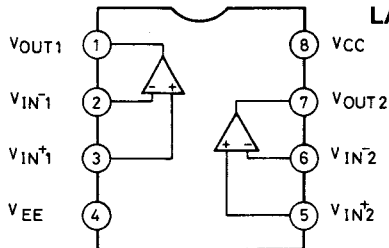
After the power switch is turned on at 3 minutes, adjust SVR703 and SVR803 respectively as follows.

L - Channel: SVR703 for 1.0mV ~ 4.0mV reading between the both leads of R723.

R - Channel: SVR803 for 1.0mV ~ 4.0mV reading between the both leads of R823.

IC BLOCK DIAGRAM

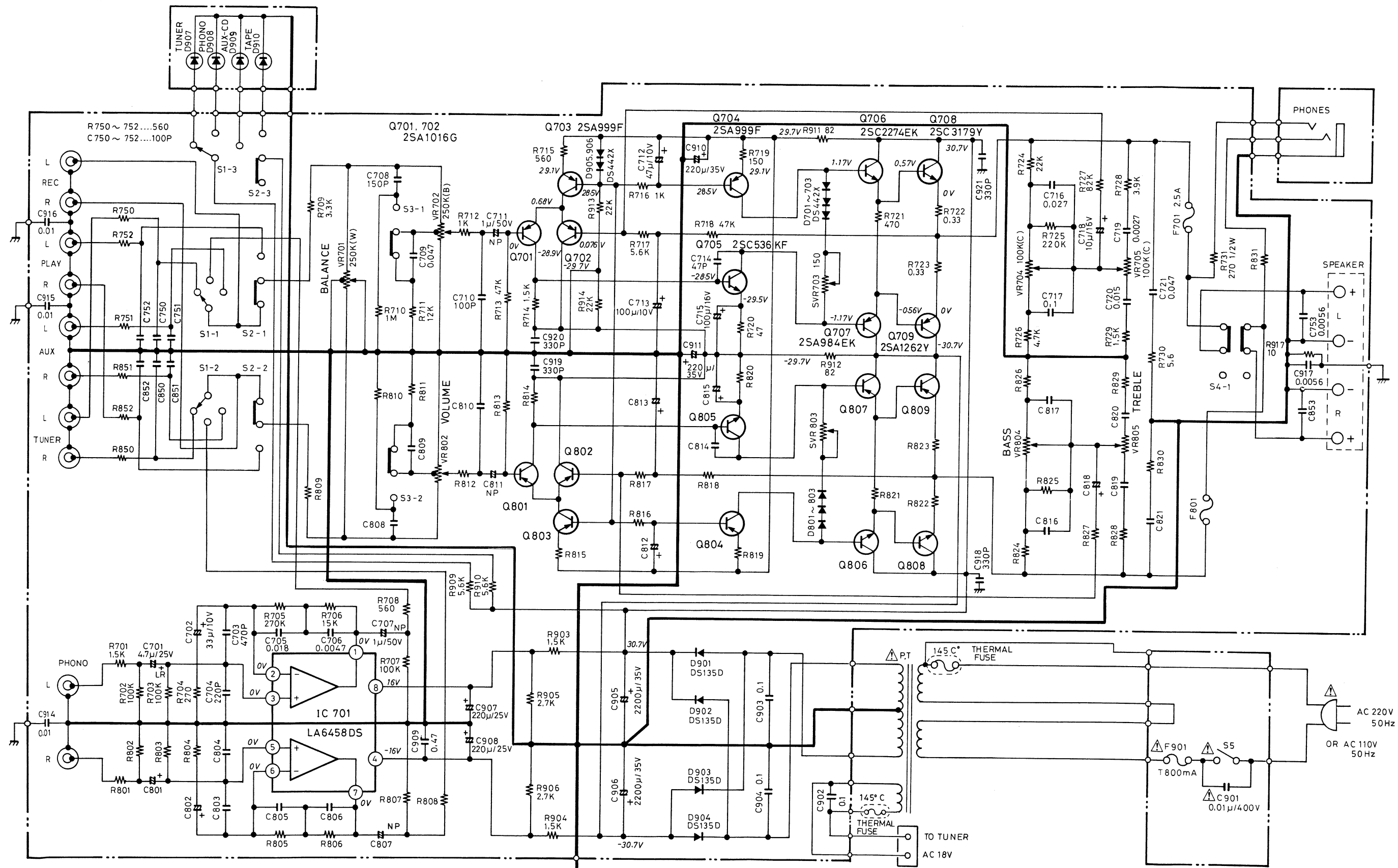
LA 6458D 6458S (DUAL OPERATIONAL AMPLIFIER)



PARTS LIST

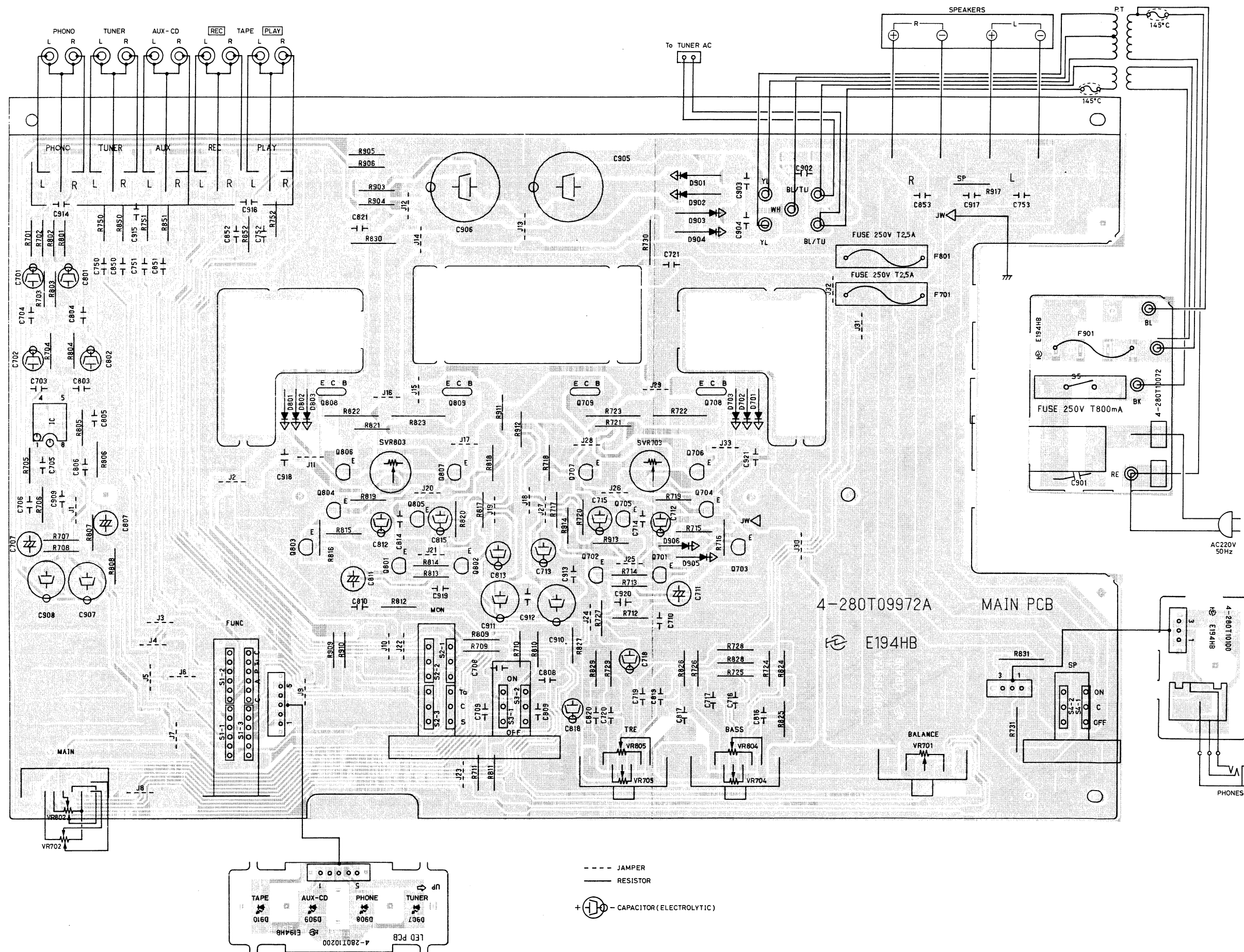
Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
PACKING				CHASSIS			
	141-6-133T-49802	Individual Carton	1	29	141-2-310T-69700	Bracket, Tuner AC	1
	141-6-144T-93000	Foam Plastic Case	1	30	141-2-210T-50700	Bracket, LED	1
	141-6-235T-35605	Inner Poly Cover, Set	1	31	141-2-464T-29900	Fixer, Lead	1
	141-6-410T-97201	Instruction Manual	1	32	141-2-421T-28800	Special Screw, Ground	1
	141-6-415T-32300	Notice	1			Washer 3 x 10 x 1t, Ground	1
CABINET						External Tooth Lock Washer	2
		3 x 6.5 x 0.45t, Ground		33	141-2-421T-43901	Special Screw, Socket	5
1	141-0-122T-50201	Front Panel Ass'y	1			3 x 8mm	
		Binding Hd. Tapping Screw	3	34	141-2-415T-02500	Hexagon Nut, VR	4
2	141-2-111T-58200	Cabinet	1	35	141-2-382T-07000	Terminal	1
		Binding Hd. Tapping Screw	5			Pan Hd. Tapping Screw	1
3	141-2-163T-81701	Rotary Knob, Main VR	1			w/Washer 3 x 10mm	
4	141-2-163T-45401	Rotary Knob	3			Headphone PCB Mtg.	
5	141-2-163T-45400	Rotary Knob	1			Pan Hd. Tapping Screw	1
6	141-6-479T-62300	Lable	1			w/Washer 3 x 10mm	
CHASSIS						Power Sw. PCB Mtg.	
						Binding Hd. Tapping Screw	1
						3 x 4mm	
CHASSIS				ELECTRICAL PARTS			
21	141-2-125T-31900	Bottom Lid	1	51	4-300T-70300	Power Transformer	1
22	141-2-126T-45201	Back Lid	1			Binding Hd., Self Tapping	4
		Binding Hd. Tapping Screw	5			Screw 4 x 8 Trans	
		3 x 8mm		52	4-243T-48973	Power Cord	1
23	141-2-310T-75101	Bracket, Heat Sink	1	53	4-234T-10583	Fuse 2A	1
24	141-2-310T-75001	Bracket, Heat Sink	1	54	4-234T-10589	Fuse 2.5A	2
		Pan Hd. Tapping Screw	2	55	141-2-368T-26101	Heat Sink	1
		w/Washer 3 x 6mm,				Pan Hd. Tapping Screw	2
		PCB Bracket				w/Washer 3 x 6 Heat Sink +	
		External Tooth Lock Washer	1			Bracket	
		3 x 6.5 x 0.45t PCB Bracket		56	141-2-243T-09800	Base	4
		Pan Hd. Tapping Screw	2	57	141-2-327T-26100	Insulator	4
		w/Washer 3 x 8mm				Binding Hd. Screw, 3 x 8mm	4
		Bracket + Bottom				Transistor	
25	141-2-160T-25900	Push Button, SP Monitor	3	58	4-240T-16572	Socket, Tuner Socket	1
26	141-2-160T-16501	Push Button, Power Switch	1	59	4-240T-47673	Socket, 3p	2
27	141-2-464T-14400	Fixer, AC	1	60	4-240T-47675	Socket, 5p	2
28	141-2-174T-13100	Stand	4				

SCHEMATIC DIAGRAM

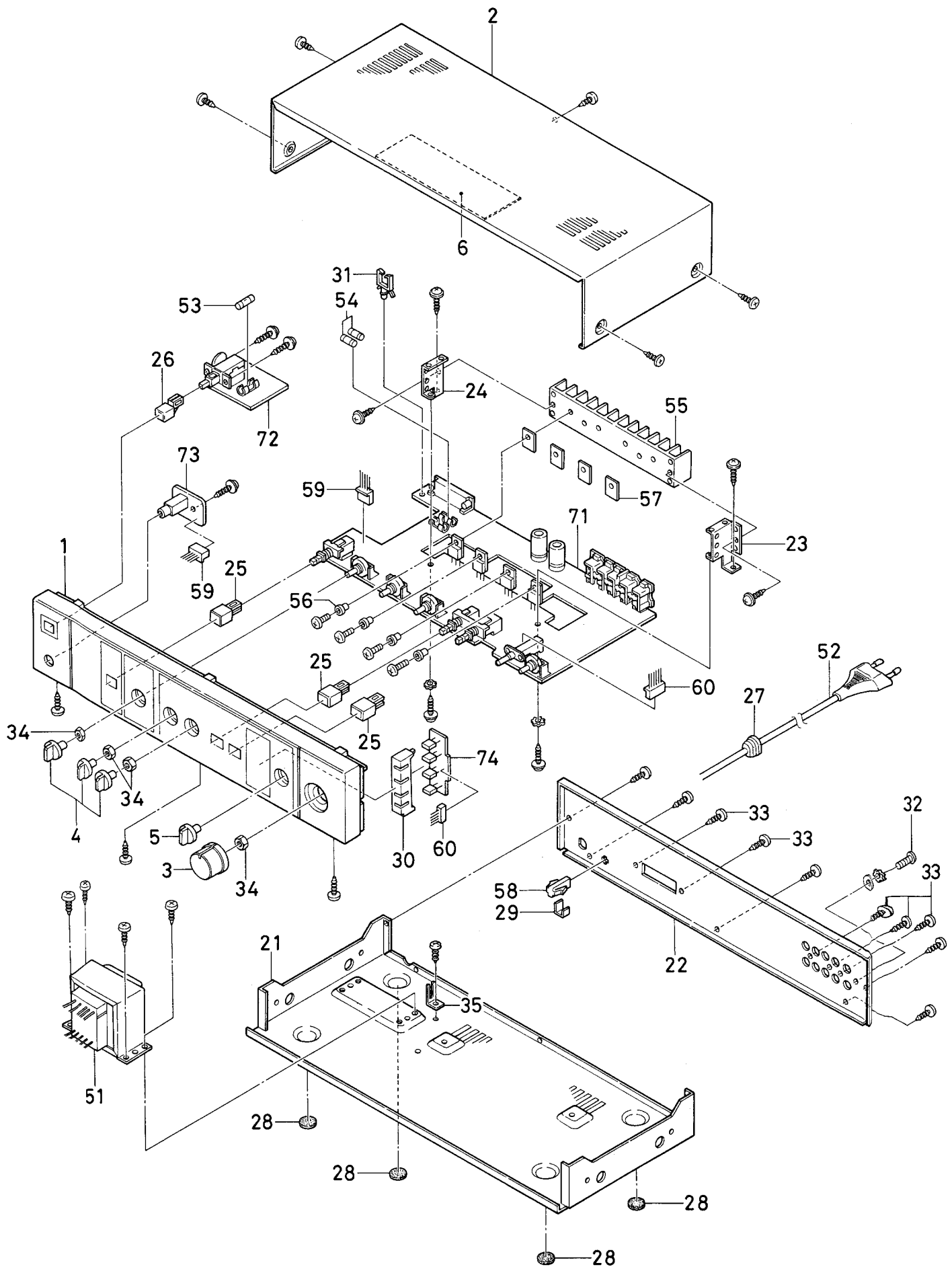


- S1-1, 2, 3 FUNCTION (TUNER, PHONO, AUX)
S2-1, 2, 3 MONITOR (TAPE, SOURCE)
S3-1, 2 LOUDNESS (ON, OFF)
S4-1, 2 SPEAKER (ON, OFF)
S5 POWER (ON, OFF)

WIRING DIAGRAM



EXPLODED VIEW



PARTS LIST

Ref. No.	Part No.	Description	Q'ty
MAIN AMP P. C. B. ASS'Y			
71	141-4-280T-09972	P.C.B. Ass'y, Main Amp	1
	4-240T-50400	Socket, 4p Tape Socket	1
	4-240T-50572	Socket, 6p Phono Tuner, AUX-CD	1
	4-237T-09900	Terminal Board, SP Socket 4p	1
	4-238T-73600	Switch, SP	1
	4-238T-73700	Switch, Loud Monitor	1
	4-238T-60900	Rotary Switch, Function	1
	4-220T-13000	Variable Resistor, 250K-B Main	1
	4-220T-12900	Variable Resistor, 250K-W Balance	1
	4-220T-13100	Variable Resistor, 100K-C Tone	2
SVR 703, SVR 803	4-222T-73595	Variable Resistor	2
	141-2-381T-04202	Bracket Fuse	4
	4-237T-00100	Terminal Bord	5
	141-4-472T-11000	Lug	1
IC701		IC LA6458DS	1
Q701,702, 801,802		Transistor 2SA1016	4
Q703,704, 803,804		Transistor 2SA999	4
Q705,805		Transistor 2SC536 AUD	2
Q706,806		Transistor 2SC2274	2
Q707,807		Transistor 2SA984	2
Q708,808		Transistor 2SC3179	2
Q709,809		Transistor 2SA1262	2
D901,902, 903,904		Diode DS135 D L	4
D701,702, 703,801, 802,803		Diode DS442 X	6
D905,906		Diode DS442 X	2
CAPACITORS			
C910,911		Electrolytic 220μF 35V	2
C907,908		Electrolytic 220μF 25V	2
C715,815		Electrolytic 100μF 16V	2
C713,813		Electrolytic 100μF 10V	2
C712,812		Electrolytic 47μF 10V	2
C718,818		Electrolytic 10μF 16V	2
C702,802		Electrolytic 33μF 10R	2
C905,906		Electrolytic 2200μF 35V	2
C701,801		Electrolytic 4.7μF (NPO) 25V	2
C707,711, 807,811		Electrolytic 1μF (NPO) 50V	4
C709,809		Nonpolar	
C721,821		Mylar 0.047μF ±10% 50V	2
C902		Mylar 0.047μF ±20% 50V	2
C903,904		Mylar 0.1μF ±20% 50V	1
C753,853		Mylar 0.1μF ±20% 100V	2
C717,817		Mylar 0.0056μF ±20% 50V	2
C720,820		BC-Con 0.1μF ±10% 25V	2
C705,805		BC-Con 0.015μF ±10% 25V	2
C716,816		BC-Con 0.018μF ±10% 25V	2
C719,819		BC-Con 0.022μF ±10% 25V	2
C706,806		BC-Con 0.0027μF ±10% 25V	2
C705,751, 752,850, 851,852		BC-Con 0.0047μF ±10% 25V	2
C914,915, 916		Ceramic 100pF ±10% 50V	6
C710,810		Ceramic 0.01μF +80-20% 50V	3
C704,804		Ceramic 100pF ±10% 50V	2
C708,808		Ceramic 220pF ±10% 50V	2
C714,814		Ceramic 150pF ±10% 50V	2
C703,803, C917,919, 921		Ceramic 47pF ±10% 50V	2
C918,920		Ceramic 470pF ±10% 50V	2
C909		Ceramic 330pF ±10% 50V	3
		Ceramic 330pF ±10% 50V	2
		Ceramic 0.047μF +80-20% 50V	1
RESISTORS			
		All Resistors are Carbon T-type ½W ±5%, unless otherwise noted.	
R722,723 822,823		Metal 0.47 ohm S-type 1W	4
R730,830		FP-Carbon 5.6 ohm S-type ½W	2
R911,912		FP-Carbon 82 ohm S-type ½W	2
R731,831		FP-Carbon 270 ohm P-type ½W	2
R903,904		FP-Carbon 1.5K ohm S-type ½W	2

Ref. No.	Part No.	Description	Q'ty
MAIN AMP P. C. B. ASS'Y			
	RESISTORS		
	All Resistors are Carbon T-type ½w ±5%, unless otherwise noted.		
R710,810		1M ohm	2
R705,805		270K ohm	2
R725,825		220K ohm	2
R702,703, 707,802, 803,807		100K ohm	6
R727,827		82K ohm	2
R713,813, 718,818		47K ohm	4
R724,824 913,914		22K ohm	4
R706,806		15K ohm	2
R711,811		12K ohm	2
R717,817, 909,910		5.6K ohm	4
R726,826		4.7K ohm	2
R728,828		3.9K ohm	2
R709,809		3.3K ohm	2
R701,801, 714,814, 729,829		1.5K ohm	6
R712,716, 812,816		1K ohm	4
R708,715, 808,815		560 ohm	4
R750,751, 752,850, 851,852		560 ohm	6
R721,821		470 ohm	2
R704,804		270 ohm	2
R719,819		150 ohm	2
R720,820		47 ohm	2
R905,906		2.7K ohm	2
R917		10 ohm	1
POWER SWITCH P. C. B. ASS'Y			
72	141-4-280T-10072	P.C.B. Ass'y, Power Switch	1
S5	4-238T-70380	Switch	1
	141-2-381T-04202	Bracket Fuse	2
C901	4-223T-12100	Capacitor 0.01μF 400V	1
	141-2-382T-18900	Terminal Bord	2
	141-2-135T-75700	Cover	1
HEAD PHONE P. C. B. ASS'Y			
73	141-4-280T-10100	P.C.B. Ass'y, Headphone	1
	4-240T-09171	Socket	1
LED P. C. B. ASS'Y			
74	141-4-280T-10200	P.C.B. Ass'y, LED	1
D907 ~ 910		LED SLP165B3 Red	4

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